P.L.

TRANSMITTAL OF CONTRACTOR'S SUBMITTAL
(ATTACH TO EACH SUBMITTAL)

Date: 2/18/07

TO: Pat Likins
100 North Senate Avenue
MC 66-30, IGCN 1101
Indianapolis, IN 46204

Submittal No.: 25A
☐ New Submittal ☒ Resubmittal
Project: Continental Steel - OU5
Project No.: 11655
Specification Section No.: None
(Cover only one section with each transmittal)
Schedule Date of Submittal:

FROM: KERAMIDA Environmental, Inc.
Contractor
401 North College Avenue
Indianapolis, IN 46202

SUBMITTAL TYPE: ☐ Shop Drawing ☐ Sample ☒ Informational

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes
3	VOC Remediation Area	–	–		X
	Soil Removal Sampling Report-				
	Revised				

Contractor hereby certifies that (i) Contractor has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By Scott Randall
Contractor (Authorized Signature)

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AIR • LAND • WATER • WASTE

401 North College Avenue
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VOC REMEDIATION AREA SHALLOW SOIL RESULTS for RISC CALCULATIONS
CONTINENTAL STEEL SUPERFUND SITE
MAIN PLANT AREA (OU5) REMEDIAL ACTION
WEST MARKLAND AVENUE
KOKOMO, INDIANA
KERAMIDA PROJECT NO. 11655

Submitted to:

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
Ms. Pat Likins, Project Manager
Superfund Section
Office of Land Quality
100 North Senate Avenue
Indianapolis, Indiana 46204-6015

Submitted for:

CONTINENTAL STEEL SUPERFUND SITE REMEDIAL ACTION
West Markland Avenue
Kokomo, Indiana

Submitted By:

KERAMIDA ENVIRONMENTAL, INC.
401 North College Avenue
Indianapolis, Indiana 46202
(317) 685-6600

KERAMIDA Environmental, Inc.
PROJECT Continental Steel-045
SUBMITTAL # 25A
SPECIFICATION # None

This submittal has been reviewed and found to be in compliance with the Contract Documents.

Reviewer: Scott Randall Date: 2/18/07

January 23, 2007
Revised February 18, 2007

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Scott Randall, L.P.G., C.H.M.M.
Senior Project Manager

January 23, 2007
Revised February 18, 2007

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1.0 INTRODUCTION

KERAMIDA Environmental, Inc. (KERAMIDA) prepared a Soil Removal Sampling Work Plan to collect data from the top two feet of the volatile organic compound (VOC) impacted area of the site at the Continental Steel Superfund Site (Site) located on West Markland Avenue, Kokomo, Howard County, Indiana, shown in Figure 1. The purposed of the data collection was to determine if this shallow soil horizon was collectively below the remediation goal of this project, and could subsequently be excavated and moved to the designated fill area of the site. RISC guidelines were used to collect and evaluate the data. Regulatory management of the Site is through the Indiana Department of Environmental Management (IDEM) Federal Programs Section.

The contaminants of concern (COC) identified in VOC Remediation Area are trichloroethene (TCE) and its degradation products cis- and trans-1,2-dichloroethene (1,2-DCE) and vinyl chloride (VC). The VOC remediation goal (RG) for soil in the VOC Remediation Area is 1,000 ug/kg.

2.0 VOC REMEDIATION AREA DESCRIPTION

The Main Plant Operable Unit 5 (OU5) consisted of three tracts of land comprising approximately 100 acres. The Superfund area of the Site consists of 94 acres. The VOC Remediation Area as preliminarily delineated consisted of an inverted "L" shaped area south of West Markland Avenue and east of Park Avenue. The VOC Remediation Area originally extended south along Park Avenue approximately 540 feet south of the West Markland Avenue – Park Avenue intersection and 200 feet east of the intersection along West Markland Avenue.

The remediation area extended from the south and east edges, respectively of West Markland Avenue and Park Avenue approximately 75 feet into the Site.

3.0 FIELD METHODOLOGIES AND RESULTS

Following RISC guidelines, fourteen samples would be required for an area this size to determine if the shallow soil horizon, collectively, would be classified as below the RG. A previous geoprobe investigation during this project had collected four shallow soil samples that could be used in this analysis, so ten additional samples would be required by RISC. IDEM requested an additional seven samples be collected to add additional validity to the RISC determination. Seventeen borings were completed at the locations shown on Figure 1. Locations of these boring were determined using a random number generator and a grid system over the VOC area. Further details are available in the Sampling Plan. The borings were advanced using a Geoprobe® push-probe rig mounted on a Bobcat. Borings were advanced to a two foot depth. The soil core and liner were extracted from the core barrel, labeled, and set aside until all sample depth intervals had been retrieved. The liners were then split open sequentially to expose the soil cores. The soil cores were immediately scanned for organic vapors at a one-foot interval using a photo-ionization detector (PID). Upon completion, the borings will be filled with bentonite and hydrated. Each boring location was marked with a stake and flagging and identified by a unique designation that corresponded to the sampling node.

4.0 RESULTS, STATISTICAL ANALYSIS, AND CONCLUSION

VOC soil analytical results for shallow soils are presented in Table 1. Results indicate that the average of all shallow soil samples exceeds the RG for the site and statistical analysis of the data following RISC guidelines indicate that the 95% confidence interval (attachment 1) also exceeds the RG for the site. However, the average for all shallow soil sampling points north of Node 303 is below the RG and statistical analysis of the data following RISC guidelines for all sampling points north of Node 303 indicate that the 95% confidence interval (attachment 2) is also below the RG for the site. More specific discussion of the statistical analysis follow.

The statistical evaluation was performed using Pro UCL, a statistical software package developed by the USEPA. The data was evaluated in two sets:

1. All of the analytical data (attachment 1).
2. From Node 303 north to West Markland Avenue (attachment 2).

Each data set consisted of "Total VOCs" determined by adding together the results for trichloroethene (TCE), *cis*-1,2-dichloroethene (1,2DCE), and vinyl chloride (VC) as determined at each sample point. If a compound was not detected, a concentration equal to one half the detection limit (DL) was used in the Total VOCs sum. This method had the greatest effect on the results for Node 322, increasing the Total VOC concentration approximately 10 percent. Each data set was analyzed to determine the distributional model appropriate to use as a statistical test. The set composed of all the analytical data has a non-parametric distribution. The mean is 3,069 which exceeds the Remedial Goal (RG) of 1,000 micrograms per kilogram (ug/kg). The data set composed of the results north of Node 303 has a lognormal distribution. The arithmetic mean of the data is 283.5385. The calculated 95% Chebyshev (MVUE) upper confidence limit is 577.8234. This result is below the RG of 1,000 ug/kg. The printouts from Pro UCL for both sets of data are attached.

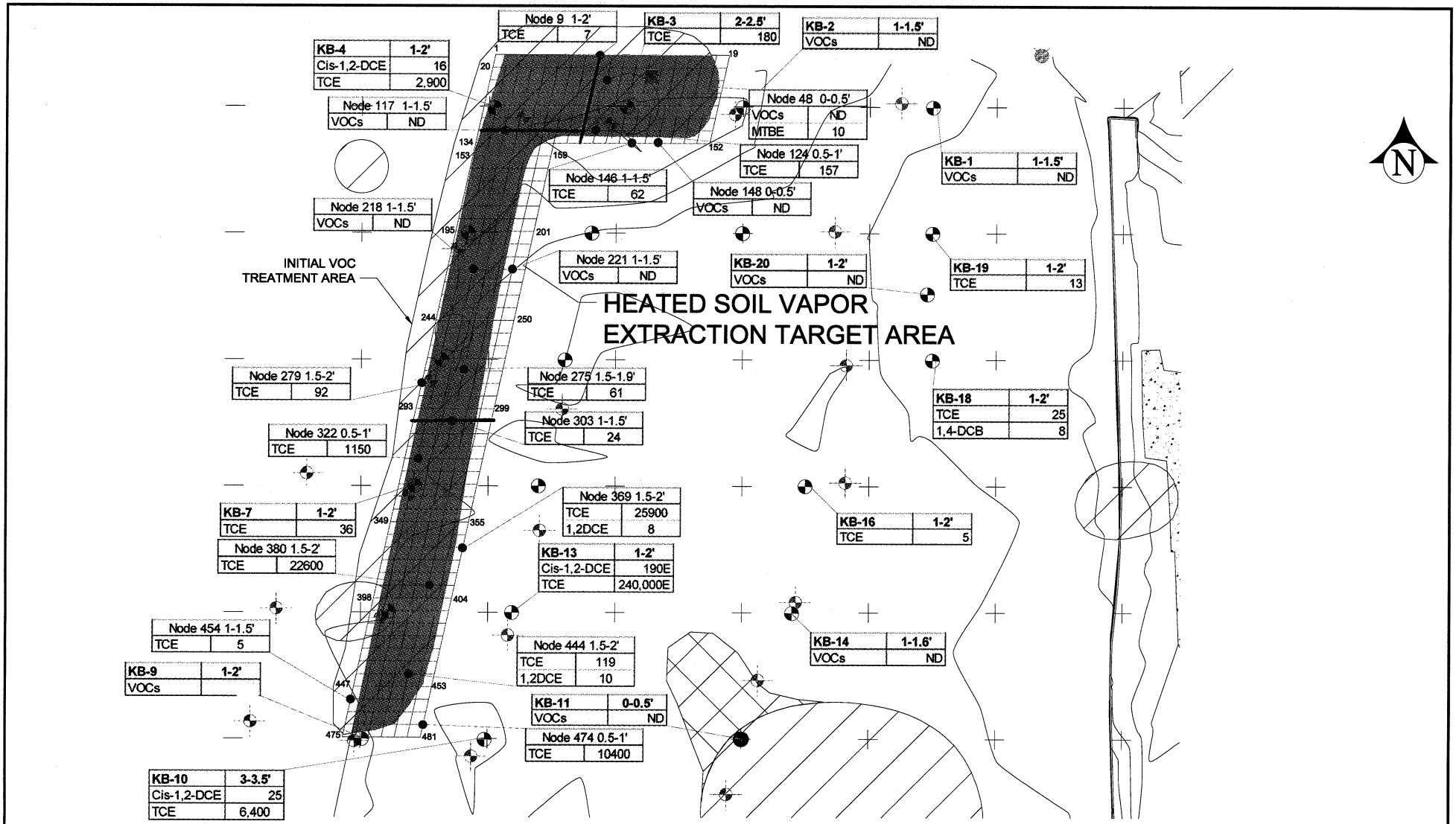
Subsequent data validation of the original geoprobe sampling points labeled KB-1, KB-2, KB-3 etc. indicated that one of the points used in the above calculations, KB-4, reported result was outside of the calibration range and therefore was a estimated value and could have been reported lower than actual concentration. To insure the health and safety of future users of this property the decision was made to leave KB-4 and the surrounding area in place also for subsequent VOC remediation and potential off-site disposal if other impacts are present after VOC remediation.

Using the results from straight averaging of the sample results, statistical analysis according to RISC, data validation, and discussions with IDEM representatives on site, it has been determined that the zero to two foot interval of soil in the original VOC area north of Node 303 and South of Node 117 can be removed and transported to the designated fill area on-site. Additionally it was determined that the zero to two foot interval of soil in the original VOC area east of Node 9 can be removed and transported to the designated fill area on-site. The shallow soil to the south of

Node 303, north of Node 117, and west of Node 9 will remain in place and be treated during the VOC remediation in that area. Final disposition of the shallow soil left in place will be determined after post remediation sampling for PNAs and heavy metals are collected and analyzed.

FIGURE 1

Results of Shallow Soil Samples in VOC Remediation Area



Keramida 2006 Delineation Boring

Pre-existing Boring

All results reported in micrograms per kilogram (ug/kg)

SCALE: 1"= 70'

0 35' 70'

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Project:	Continental Steel Main Plant Kokomo, Indiana		
Scale:	1" = 70'	Drawn By:	J.CLARK
Project Number:	11655	Approved By:	BRW
Date:	January 24, 2006	File No.	11655SAMP

Figure 1

Results of Shallow Soil Samples in VOC Remediation Area

TABLE 1

Results of Shallow Soil Samples in VOC Remediation Area (ug/kg)

Table 1
Results of Shallow Soil Samples in VOC Remediation Area (ug/kg)
Continental Steel Superfund Site
Main Site Area (OU5) Remedial Action
1302 South Park Avenue
Kokomo, Indiana
KERAMIDA Project No. 11655

Sample Location	Sample Depth	Trichloroethene (ug/Kg)	Cis-1,2-Dichloroethene (ug/Kg)	Vinyl Chloride (ug/Kg)	Total VOCs (ug/Kg)[1]
KB-3	2-2.5	**180**	<7	<7	**187**
KB-4	1-2	**2,900**	**16**	<250	**3,041**
KB-7	1-2	**36**	<8	<8	**42**
KB-9	1-2	**7**	<4	<4	**11**
Node 9	1-2	**7**	**2**	**2**	**11**
Node 48	0-0.5	<4	<4	<2	**5**
Node 117	1-1.5	<5	<5	<2	**6**
Node 124	0.5-1	**157**	<8	<3	**163**
Node 146	1-1.5	**62**	<9	<4	**69**
Node 148	0-0.5	<4	<4	<2	**5**
Node 218	1-1.5	<5	<5	<2	**6**
Node 221	1-1.5	<5	<5	<2	**6**
Node 275	1.5-1.9	**61**	<5	<2	**65**
Node 279	1.5-2	**92**	<6	<2	**96**
Node 303	1-1.5	**24**	<5	<2	**28**
Node322	0.5-1	**1,150**	<220	<89	**1,304.5**
Node 369	1.5-2	**25,900**	**8**	<2	**25,909**
Node 380	1.5-2	**22,600**	<240	<98	**22,769**
Node 444	1.5-2	**119**	**10**	<2	**130**
Node 454	1-1.5	**5**	<4	<2	**8**
Node 474	0.5-1	**10,400**	<280	<110	**10,595**

[1] Results equal detections plus 1/2 detection limits of non-detections.

Total of all Shallow Samples	**64,455**
Average of all Shallow Samples	**3,069**

Total of all Shallow Samples from Node 303 and North	**3,739**
Average of all Shallow Soils from Node 303 and North	**249**

Remediation Goal	**1,000**

- Exceeds Remediation Goal

ATTACHMENT 1

Statistical Analysis of Entire Data Set

Statistical Analysis of Entire Data Set			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	21	Shapiro-Wilk Test Statisitic	0.4715408
Number of Unique Samples	18	Shapiro-Wilk 5% Critical Value	0.908
Minimum	5	Data not normal at 5% significance level	
Maximum	25909		
Mean	3069.2143	95% UCL (Assuming Normal Distribution)	
Median	64.5	Student's-t UCL	5879.6062
Standard Deviation	7467.2109		
Variance	55759239	Gamma Distribution Test	
Coefficient of Variation	2.4329389	A-D Test Statistic	2.3027105
Skewness	2.593556	A-D 5% Critical Value	0.8862053
		K-S Test Statistic	0.3243929
Gamma Statistics		K-S 5% Critical Value	0.2093164
k hat	0.2091322	Data do not follow gamma distribution	
k star (bias corrected)	0.2110022	at 5% significance level	
Theta hat	14675.952		
Theta star	14545.887	95% UCLs (Assuming Gamma Distribution)	
nu hat	8.7835526	Approximate Gamma UCL	8386.8804
nu star	8.8620927	Adjusted Gamma UCL	9107.5777
Approx.Chi Square Value (.05)	3.2431202		
Adjusted Level of Significance	0.0383	Lognormal Distribution Test	
Adjusted Chi Square Value	2.9864869	Shapiro-Wilk Test Statisitic	0.8683695
		Shapiro-Wilk 5% Critical Value	0.908
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	1.6094379		
Maximum of log data	10.162346	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.5347741	95% H-UCL	191882.89
Standard Deviation of log data	2.8455435	95% Chebyshev (MVUE) UCL	11637.112
Variance of log data	8.0971178	97.5% Chebyshev (MVUE) UCL	15501.473
		99% Chebyshev (MVUE) UCL	23092.261
		95% Non-parametric UCLs	
		CLT UCL	5749.4687
		Adj-CLT UCL (Adjusted for skewness)	6734.8747
		Mod-t UCL (Adjusted for skewness)	6033.3096
		Jackknife UCL	5879.6062
		Standard Bootstrap UCL	5660.8443
		Bootstrap-t UCL	20518.879
RECOMMENDATION		Hall's Bootstrap UCL	6902.1349
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	5944.0952
		BCA Bootstrap UCL	7098.7381
Use 99% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	10171.949
		97.5% Chebyshev (Mean, Sd) UCL	13245.307
		99% Chebyshev (Mean, Sd) UCL	19282.33

ATTACHMENT 2

Statistical Analysis of Data Set North of Node 303

General Statistics

Statistical Analysis of Data Set North of Node 303			
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	13	Shapiro-Wilk Test Statisitic	0.3698881
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.866
Minimum	5	Data not normal at 5% significance level	
Maximum	3041		
Mean	283.53846	95% UCL (Assuming Normal Distribution)	
Median	27.5	Student's-t UCL	694.22481
Standard Deviation	830.81472		
Variance	690253.1	Gamma Distribution Test	
Coefficient of Variation	2.9301659	A-D Test Statistic	1.5265956
Skewness	3.5707864	A-D 5% Critical Value	0.8259918
		K-S Test Statistic	0.2760187
Gamma Statistics		K-S 5% Critical Value	0.255716
k hat	0.3191125	Data do not follow gamma distribution	
k star (bias corrected)	0.2967532	at 5% significance level	
Theta hat	888.52208		
Theta star	955.46902	95% UCLs (Assuming Gamma Distribution)	
nu hat	8.2969238	Approximate Gamma UCL	850.97118
nu star	7.7155824	Adjusted Gamma UCL	1009.3063
Approx.Chi Square Value (.05)	2.5707855		
Adjusted Level of Significance	0.03009	Lognormal Distribution Test	
Adjusted Chi Square Value	2.167493	Shapiro-Wilk Test Statisitic	0.8699191
		Shapiro-Wilk 5% Critical Value	0.866
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	1.6094379		
Maximum of log data	8.0199417	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.5081393	95% H-UCL	3067.4291
Standard Deviation of log data	1.9410788	95% Chebyshev (MVUE) UCL	577.82336
Variance of log data	3.7677867	97.5% Chebyshev (MVUE) UCL	758.47822
		99% Che	1113.3397
		95% Non-parametric UCLs	
		CLT UCL	662.5564
		Adj-CLT UCL (Adjusted for skewness)	906.3965
		Mod-t UCL (Adjusted for skewness)	732.25893
		Jackknife UCL	694.22481
		Standard Bootstrap UCL	646.20575
		Bootstrap-t UCL	4611.2937
RECOMMENDATION		Hall's Bootstrap UCL	2750.0072
Data are lognormal (0.05)		Percentile Bootstrap UCL	731.65385
		BCA Bootstrap UCL	966.61538
Use 99% Chebyshev (MVUE) UCL		95% Chebyshev (Mean, Sd) UCL	1287.9445
		97.5% Chebyshev (Mean, Sd) UCL	1722.5518
		99% Chebyshev (Mean, Sd) UCL	2576.2536